CP&L

Carolina Power & Light Company
P.O. Box 10429
Southport, NC 28461-0429

DEC 0 6 1999

10 CFR 50.73

SERIAL: BSEP 99-0195

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

BRUNSWICK STEAM ELECTRIC PLANT, UNIT NO. 1
DOCKET NO. 50-325/LICENSE NO. DPR-71
LICENSEE EVENT REPORT 1-99-009

Gentlemen:

In accordance with the Code of Federal Regulations, Title 10, Part 50.73, Carolina Power & Light (CP&L) Company submits the enclosed Licensee Event Report. This report fulfills the requirement for a written report within thirty (30) days of a reportable occurrence.

Please refer any questions regarding this submittal to Mr. Keith R. Jury, Manager - Regulatory Affairs, at (910) 457-2783.

Sincerely,

C. J. Gannon
Plant General Manager
Brunswick Steam Electric Plant

SFT/sft

Enclosure: Licensee Event Report

IE22

ADOCK 05000325
PDR

cc (with enclosure):

U. S. Nuclear Regulatory Commission, Region II
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Atlanta Federal Center
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Atlanta, GA 30303-3415

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P.O. Box 29510
Raleigh, NC 27626-0510

NRC FORM 366 U.S. NUCLEAR REGULATORY COMMISSION
(6-1998)

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

APPROVED BY OMB NO. 3150-0104 EXPIRES 06/30/2001

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Brunswick Steam Electric Plant (BSEP), Unit No. 1	05000 325	1 OF 4

TITLE (4)
Unplanned Reactor Feed Pump Trip Results in Insertion of Manual Reactor Trip

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL	REVISION	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
										05000
11	05	1999	1999	-- 009 -	00	12	06	1999	FACILITY NAME	DOCKET NUMBER
										05000

OPERATING MODE (9)	1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)							
POWER LEVEL (10)	100	20.2201(b)		20.2203(a)(2)(v)		50.73(a)(2)(i)		50.73(a)(2)(viii)	
		20.2203(a)(1)		20.2203(a)(3)(i)		50.73(a)(2)(ii)		50.73(a)(2)(x)	
		20.2203(a)(2)(i)		20.2203(a)(3)(ii)		50.73(a)(2)(iii)		73.71	
		20.2203(a)(2)(ii)		20.2203(a)(4)	X	50.73(a)(2)(iv)		OTHER	
		20.2203(a)(2)(iii)		50.36(c)(1)		50.73(a)(2)(v)		Specify in Abstract below or in NRC Form 366A	
		20.2203(a)(2)(iv)		50.36(c)(2)		50.73(a)(2)(vii)			

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER (Include Area Code)
Steven F. Tabor, Project Analyst - Regulatory Affairs	(910) 457-2178

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX

SUPPLEMENTAL REPORT EXPECTED (14)			EXPECTED	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE).	X	NO				

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On November 5, 1999, at approximately 1050 hours, with Unit 1 operating at rated power, the Unit 1 reactor feed pump (RFP) 1B tripped during the performance of feed pump testing activities. As a result of the RFP trip, reactor water level decreased. Prior to reaching the automatic reactor water level trip low level 1 setpoint, a manual reactor trip was inserted. The required system actuations occurred as a result of reaching the low level 1 setpoint. By 1105 hours, the 1B RFP trip logic was reset and the pump operated in conjunction with the Startup Level Control valve to control reactor water level.

The most likely cause of the occurrence is attributed to a man-machine interface issue or a possible intermittent electrical malfunction of the overspeed control circuit. Corrective actions include incorporation of the lessons learned into the pre-job brief database, additional testing of the Unit 1 and 2 RFP trip lockout control switches and associated overspeed test circuit, and implementation of equipment enhancements as needed.

This event is being reported in accordance with the requirements of 10 CFR 50.73(a)(2)(iv) in that the RFP trip resulted in the actuation of Engineered Safety Feature systems.

Energy Industry Identification System (EIIS) codes are identified in the text as [XX].

INITIAL CONDITIONS

On November 5, 1999, Unit 1 was operating at rated power. At approximately 1040 hours, surveillance test procedure 0PT-37.2.1, "Reactor Feed Pump Turbine Tests," was initiated for the 1A and 1B reactor feed pumps (RFPs) [JK]. Although functionally available, the 1B Core Spray system [BM] was declared inoperable to perform scheduled surveillance testing. The other Emergency Core Cooling systems were operable at this time.

EVENT DESCRIPTION

On November 5, 1999, following successful completion of surveillance test 0PT-37.2.1 on the Unit 1 RFP 1A, testing of the 1B RFP was initiated. This testing ensures that the solenoids and mechanical components associated with the RFP automatic trip system will operate properly during a RFP turbine overspeed condition. The surveillance procedure requires the operator to hold the RFP trip lockout control switch in the lockout position to prevent a RFP trip and then actuate the turbine overspeed trip mechanism.

With the 1B RFP trip lockout control switch in the lockout position, prior to resetting the 1B RFP turbine overspeed trip mechanism, a trip of the 1B RFP occurred. Operations initiated a reduction in reactor recirculation flow to reduce reactor power in advance of receiving the automatic reactor recirculation system runback, mitigating the effects of the feedwater flow transient. 1A RFP operation was unable to maintain reactor water level. Prior to reaching the reactor water low level 1 trip setpoint, a manual reactor trip signal was inserted at 1050 hours. The control rods inserted as required. Upon reaching the reactor water low level 1 setpoint, the required Groups 2 and 6 Primary Containment Isolation system (PCIS) [JM] valves isolated (i.e., Drywell Floor/Equipment Drains, Traversing Incore Probe, Residual Heat Removal Discharge Isolation to Radwaste/RHR Process Sampling, and Containment Atmospheric Control and Post Accident Sampling). In addition, actuation of the PCIS Group 8, (i.e., Shutdown Cooling) isolation logic occurred; however, the valves were already closed prior to the occurrence. The plant systems responded as designed. By 1105 hours, the 1B RFP trip logic was reset and the pump operated in conjunction with the Startup Level Control valve to control reactor water level.

The PCIS isolation logic was reset by 1230 hours. HPCI was placed in the standby configuration by 1313 hours. At 1328 hours, notification of the ESF system actuations was made to the NRC (i.e., Event Number 36404) in accordance with 10 CFR 50.72(b)(2)(ii). On November 6, 1999, at 0133 hours, following the verification of unit system readiness, reactor startup was commenced.

This event is being reported in accordance with the requirements of 10 CFR 50.73(a)(2)(iv) in that the RFP trip resulted in the actuation of Engineered Safety Feature systems.

EVENT CAUSE

The need to insert the manual reactor trip resulted from a decreasing reactor water level following the 1B RFP trip. The cause of the 1B RFP trip could not be conclusively determined. The most likely causes are man-machine interface, which resulted in the failure of the operator to hold the lockout control switch in the fully engaged position, or a possible intermittent electrical malfunction of the RFP overspeed lockout test circuit. Following the occurrence, two additional tests of the 1B RFP overspeed lockout test circuit failed to replicate the malfunction that resulted in the 1B RFP trip.

Evaluation into the occurrence determined that the switch installed to provide the RFP trip lockout control function is not optimum for the overspeed testing application. The existing switches are spring loaded and require an operator to hold the switch in position against the spring pressure while performing the overspeed test. A slight relaxation of the switch can result in disengagement of the switch contacts, increasing the likelihood of a RFP trip. In addition, other factors such as the use of protective gloves, residual oil on the switch handle, and environmental conditions affected the ability of the operator to ensure that an adequate and constant level of force was applied to maintain the switch in the trip override position. Consequently, based on these factors, during manipulation, the 1B RFP trip lockout control switch was potentially relaxed enough (i.e., approximately 0.125 inches from full engagement) to defeat the trip override function while performing the overspeed test.

CORRECTIVE ACTIONS

The Unit 1 and Unit 2 RFP trip lockout control switches will be removed, additional testing performed on the switches and associated overspeed test circuit, and equipment enhancements implemented as necessary. The switch removal and additional testing will be performed during the next scheduled refueling outages (i.e., B113R1 and B214R1).

The pre-job brief database has been revised to include the lessons learned from this occurrence.

To reduce the likelihood of a reactor water low level induced reactor trip during performance of the RFP overspeed test, Carolina Power & Light (CP&L) Company is evaluating enhancements to 0PT-37.2.1. These enhancements include revising the performance frequency from bi-weekly to quarterly and revising the test prerequisites to require performance during more restrictive plant operating conditions. These changes are operational enhancements and not actions to prevent recurrence of the event discussed in this report.

SAFETY ASSESSMENT

The safety significance of this event is considered to be minimal. Operation of the plant was within design limits and the affected systems responded as designed. The reactor trip is an anticipated operational occurrence bounded by existing safety analyses. In addition, the Emergency Core Cooling systems could have responded, if needed.

PREVIOUS SIMILAR EVENTS

A review of LERs submitted within the last four years identified no previous occurrences involving the actuation of ESF systems resulting from man-machine interface issues or intermittent control system malfunctions.

COMMITMENTS

Those actions committed to by CP&L in this document are identified below. Any other actions discussed in this submittal represent intended or planned actions by CP&L. They are described for the NRC's information and are not regulatory commitments. Please notify the Manager - Regulatory Affairs at BSEP of any questions regarding this document or any associated regulatory commitments.

The Unit 1 and Unit 2 RFP trip lockout control switches will be removed, additional testing performed on the switches and associated overspeed test circuit, and equipment enhancements implemented as necessary. The switch removal and additional testing will be performed during the next scheduled refueling outages (i.e., B113R1 and B214R1).